TASK ORDER (TO)

47QFCA19F0067

Special Mission Analysis, Research, Test and Evaluation, and Collection Support (SMARTECS)

in support of:

Remote Sensing Center – National Capital Region (RSC-NCR)

Issued to:
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Conducted under Federal Acquisition Regulation (FAR) 16.505

Issued by:
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Washington, D.C. 20405

September 18, 2019

FEDSIM Project Number 2017072DE

C.1 BACKGROUND

The Department of Defense (DoD) provides fully capable remote sensing Intelligence, Surveillance, and Reconnaissance (ISR) systems and advanced research and test capabilities to defend the United States (U.S.) and its interests and plan and synchronize operations against terrorist networks. In order to achieve this mission, DoD commanders and staff must plan and lead a full range of Special Operations missions in complex and austere environments. This requires access to and integration of advanced technologies for innovative solutions to meet warfighter needs.

The DoD is facing rapidly evolving adversary advancements in offensive and defensive capabilities. In response, the DoD has prioritized focused Research and Development (R&D) pertaining to emerging technological development as part of the Third Offset Strategy, which seeks to outmaneuver advantages made by top adversaries, primarily through technology and the integration of human thinking and artificial intelligence. The need to observe and adapt to emerging technologies, including hypersonics (traveling at Mach 5 or higher), Standoff Precision Guided Munitions (SOPGM), Unmanned Aerial Systems (UAS), and the characterization of advanced weapons systems and threats is critical for mission success.

DoD ISR is well-equipped to operate in permissive environments. However, the President, Secretary of Defense, Chairman of the Joint Chiefs of Staff, and Chief of Staff of the Air Force (AF) have all directed the transformation of the force to one more suited to win the nation's wars in contested environments. The key to maintaining the ability to operate in both permissive and contested environments is the appropriate mix of personnel, manned platforms/sensors, and remotely piloted aircraft. Air, land, maritime, space, human, and cyber sensors must be able to penetrate denied space, survive to operate, and provide required levels of persistence. The challenge is to integrate these sensors through a robust information architecture that allows highly trained multi-and all-source analysts to rapidly access and analyze all pertinent data and deliver it quickly to the warfighter and decision makers.

In support of Special Operations missions, specialized intelligence support, cyber support, and integration capabilities must continually adapt and innovate with both technical and industrial capabilities to meet the warfighters' needs. This dynamic environment creates requirements that are fluid and ever changing throughout the entire mission life-cycle.

C.1.1 PURPOSE

The purpose of the Special Mission Analysis, Research, Test and Evaluation, and Collection Support (SMARTECS) TO is to support dynamic and emerging areas of R&D testing determined to be in the best interest of national security in support of future airborne ISR and the DoD's Third Offset Strategy. To accomplish its mission, the DoD must continually advance its understanding and characterization of advanced weapons systems to reduce the U.S.' technological vulnerabilities and increase technological advantages. The Government is currently performing some aspects of the critical R&D to reach this mission. The SMARTECS TO is a new requirement that will provide guidance and technological support to contribute to the DoD's goal. Continuous testing and experimentation will provide rapid-reaction R&D to accelerate the availability of ISR systems for integration within external operations. Rapid-reaction ISR support

will refine, extend, test, and evaluate airborne ISR and their associated ground, communications, and support systems, and support ISR enrichment and collection guidance to other sensors and integrated cyber operations activities.

C.1.2 AGENCY MISSION

The Remote Sensing Center-National Capital Region (RSC -NCR) is an interdisciplinary research group chartered under the Dean of Research at the Naval Postgraduate School (NPS). The RSC-NCR interacts with DoD, Intelligence Community (IC), and other U.S. Government (USG) mission partners to understand their requirements, discover cutting-edge technologies (in Government, commercial, academic, and non-profit sectors), and introduce real-world examples to the NPS for enhanced training, education, thesis focus, and application as well as provide viable and unique solutions to the remote sensing community. In parallel, the RSC-NCR also brings technical and programmatic expertise together to allow DoD and IC mission partners to achieve their mission. The majority of supported projects involve emerging or future needs that require forward-looking and quick-reaction capabilities. The RSC-NCR is a mission-enabler with the tools and skill sets to support needs at the tempo they emerge. In addition, RSC-NCR supports research, programmatic, and execution effort with DoD and IC mission partners.

C.2 SCOPE

The scope of the SMARTECS TO is to provide program management, R&D, highly specialized engineering, analysis, integration and testing, mission planning, logistics, training, and professional services in support of the RSC and its mission partners. Specifically, this TO will allow the Government to refine, extend, and evaluate airborne platforms and airborne ISR along with their associated warfighter Tactics, Techniques, and Procedures (TTPs) and ground, communications, and support systems . The scope includes providing specialized R&D, technical, and programmatic support related to technology enablers for ISR for applicable aircraft TTPs and overall air warfare concepts. The scope also includes research and analysis of SOPGM, UAS, and advanced weapon performance characterization in support of Special Operations Forces (SOF), and associated mission equipment necessary to support ISR collection and target engagement operations.

The contractor shall provide the RSC-NCR and its mission partners with professional services for manned and unmanned airborne ISR collection, processing, and product development. The mission partner offices include AF Global Strike Command (AFGSC), AF Special Operations Command (AFSOC), AF Test Center (AFTC), Headquarters U.S. AF/Operations, Plans, and Requirements (HQ AF/A3), U.S. AF Warfare Center (USAFWC), Air National Guard – AF Reserve Command Test Center (AATC), Naval Air Systems Command (NAVAIR), Office of the Secretary of Defense (OSD), and Special Operations Command (SOCOM). The RSC-NCR retains delegated authority from the DoD to allocate TO priorities on behalf of mission partners.

Specialized professional services include R&D, engineering, warfighter TTPs, systems integration, logistics services, and advanced technology assessments.

The contractor shall support R&D in the application of scientific, engineering, and analytical disciplines to advancing:

a. Knowledge or understanding of state of the art concepts, technologies, and systems.

b. Assessment of system and subsystem requirements.
c. Development, analysis, and evaluation of concepts, technologies, systems, and subsystems.
d. Development of operational concepts and tactics.

The contractor shall perform services at Contiguous U.S. (CONUS) sites at both Government and contractor facilities, with occasional Temporary Duty (TDY) Outside CONUS (OCONUS) (e.g., Germany), on a project-by-project (e.g., technical meetings, data gathering, and TTP development) basis.

C.3 CURRENT ENVIRONMENT

The RSC-NCR and its mission partners require rapid response capabilities to bring new technologies and systems to the front lines of ISR collection and Special Operations mission support. These programs primarily operate under demanding timelines, "zero-fail" mission objectives, compressed acquisition and field test timelines, and sensitive details. One example of this time-sensitive mission is the requirement for manned and unmanned airborne ISR collection, processing, and product development.

The dynamic nature of the requirements associated with SMARTECS requires a solution that addresses cross-program, cross-agency, and cross-technology needs for a wide array of USG needs. Through the SMARTECS TO, the contractor shall rapidly and successfully address key USG requirements for national, military, and civil capability shortfalls.

C.4 OBJECTIVES

The objectives of the TO are to provide the RSC-NCR and its mission partners with high-quality, rapid response, engineering, R&D, Testing and Evaluation (T&E), collection and analysis, logistics, training, and related integrated professional services to develop and analyze advanced air warfare ISR collection and advanced weapon systems and methods. The attainment of these objectives require quick-reaction and reliable technical and program support, unique airborne collection solutions, and robust engineering, integration, and testing capabilities.

The TO will improve the DoD's current mission impacts by providing the following benefits:

a. Increase scheduled upgrade capabilities to Special Operations Forces (SOF) and other special mission unique manned and unmanned collection systems.
b. Support an increase in effectiveness of SOF conducting Violent Extremist Organization (VEO) operations in current Areas of Responsibility (AORs).
c. Decrease risk to U.S. personnel and force structure in key hot spots around the world.
d. Increase technological superiority through research studies and analysis in the field of hypersonics and hypersonic counter-measures for remote sensing purposes.
e. Increase effectiveness of TTPs and sub-optimal utilization of available technological advances.
f. Increase ability to react in a dynamic and adaptive manner to emerging technological gaps through use of focused areas of technological research.

C.5 TASKS

The contractor's TO governance structure shall be scalable to effectively support a multi-tenant environment. The Government anticipates that the contractor shall use a Work Breakdown Structure (WBS) during the performance of the TO. During the life of the TO, the Government will require varying levels of support on behalf of the organizations listed in Section C.2. The Government requires a high degree of administrative tracking of discrete work packages in the WBS.

Specific work within the scope and tasks of the SMARTECS TO will be requested by the RSC-NCR and its mission partner offices through a SMARTECS Project Requirements Document (PRD) (Section J, Attachment D) to identify and track operational support needs. The FEDSIM CO will provide written confirmation and approval that each PRD is within the SMARTECS TO scope of requirements. For each PRD, the RSC-NCR and its mission partners will designate RSC-NCR Alternate TPOCs (ATPOCs), who will lead the Integrated Project Team and be the Government liaison for project management, R&D, and engineering aspects of the project from inception to completion. The contractor shall provide all expertise and services as stated in the TO to deliver the integrated professional services.

PRDs will be initiated at varying times within a PoP, consisting of various appropriation types (e.g., one-year, two-year, or no-year), depending on the bona fide need. These efforts will be severable. A list of anticipated base period projects is included (Section J, Attachment P). It is anticipated that the Level of Effort (LOE) will remain similar throughout the option periods.

Specific tasks under the SMARTECS TO include:

a. Task 1 – Provide Program Management.
b. Task 2 – Provide Engineering and Technical Services
c. Task 3 – Provide Integration and Testing Services
d. Task 4 – Perform Modeling and Simulation
e. Task 5 – Conduct Technology Transition
f. Task 6 – Provide Education, Training, and TTP Development Services

C.5.1 TASK 1 – PROVIDE PROGRAM MANAGEMENT

The contractor shall provide program management support under this TO. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors, to satisfy the requirements identified in this Performance Work Statement (PWS).

The contractor shall facilitate Government and contractor communications, use industry best standards and proven methodologies to track and document TO requirements and activities to allow for continuous monitoring and evaluation by the Government, and ensure all support and requirements performed are accomplished in accordance with the TO. The contractor shall notify the Federal Systems Integration and Management Center (FEDSIM) Contracting Officer's Representative (COR), RSC-NCR TPOC, and/or RSC-NCR ATPOCs (as applicable per the PRD), via a Problem Notification Report (PNR) (Section J, Attachment E) of any technical, financial, personnel, or general managerial problems encountered throughout the TO PoP.

The contractor shall provide strategic guidance that integrates support across all task areas, ensure support is in accordance with TO requirements, and schedule meetings and provide deliverables in accordance with Section F.

C.5.1.1 SUBTASK 1 – ACCOUNTING FOR CONTRACTOR MANPOWER REPORTING

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this TO for the RSC-NCR via a secure data collection site: the Enterprise Contractor Manpower Reporting Application (ECMRA). The contractor shall completely fill in all required data fields using the following web address: http://www.ecmra.mil/.

Reporting inputs will be for the labor executed during the PoP during each Government Fiscal Year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the support desk at: http://www.ecmra.mil/.

Contractors may use Extensible Markup Language (XML) data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the website. The specific formats for the XML direct transfer may be downloaded from the web.

C.5.1.2 SUBTASK 2 – COORDINATE A PROJECT KICK-OFF MEETING

The contractor shall schedule, coordinate, and host a Project Kick-Off Meeting at the location approved by the Government (Section F, Deliverable 02). The meeting will provide an introduction between the contractor personnel and Government personnel who will be involved with the TO. The meeting will provide the opportunity to discuss technical, management, and security issues, and travel authorization and reporting procedures. At a minimum, the attendees shall include Key contractor Personnel, representatives from the directorates, other relevant Government personnel, and the FEDSIM COR.

At least three days prior to the Kick-Off Meeting, the contractor shall provide a Kick-Off Meeting Agenda (Section F, Deliverable 01) for review and approval by the FEDSIM COR, the RSC-NCR TPOC, and/or ATPOCs (as applicable per the PRD), prior to finalizing. The agenda shall include, at a minimum, the following topics/deliverables:

a. Points of contact (POCs) for all parties.
b. Personnel discussion (i.e., roles and responsibilities and lines of communication between contractor and Government).
c. Staffing Plan and status.
d. Updated Draft Transition-In Plan (Section F, Deliverable 16) and discussion.
e. Security discussion and requirements (i.e., building access, badges, Common Access Cards (CACs)).
f. Invoicing requirements.
g. Updated draft Quality Management Plan (QMP) (Section F, Deliverable 12).

h. Draft Project Management Plan (PMP) (Section F, Deliverable 09) and discussion including milestones, tasks, and subtasks.

The Government will provide the contractor with the number of Government participants for the Kick-Off Meeting and the contractor shall provide sufficient copies of the presentation for all present.

The contractor shall draft and provide a Kick-Off Meeting Minutes Report (Section F, Deliverable 03) documenting the Kick-Off Meeting discussion and capturing any action items.

C.5.1.3 SUBTASK 3 – PARTICIPATE IN A MONTHLY STATUS MEETING AND PREPARE A MONTHLY STATUS REPORT (MSR)

The contractor shall participate in a Monthly Status Meeting (Section F, Deliverable 05) to discuss the activities of the overall TO. The contractor shall submit Monthly Status Meeting Minutes (Section F, Deliverable 06) to document these meetings. The Monthly Status Meeting Minutes shall at a minimum include the following information:

a. Meeting attendees and, at a minimum, identify organizations represented.
b. Meeting date and location.
c. Meeting agenda.
d. Purpose of the meeting.
e. Summary of discussion (i.e., issues and risks discussed, decisions made, and action items assigned).
f. Conclusion.
g. Recommendation(s).
h. Next scheduled event(s) impacting or impacted by the meeting.

The contractor shall develop and provide an MSR (Section J, Attachment F) (Section F, Deliverable 04). The MSR shall include the following and be organized by PRD (Section J, Attachment D):

a. Activities during reporting period, by PRD (include ongoing activities, new activities, and activities completed, and progress to date on all above-mentioned activities). Each section shall start with a brief description of the PRD, including the name of the supported mission partner, and be organized by task and subtask.
b. Problems and corrective actions taken. Also, include issues or concerns and proposed resolutions to address them.
c. Personnel gains, losses, and status (security clearance or other personnel information).
d. Government actions required.
e. Schedule including major tasks, milestones, and deliverables; planned and actual start and completion dates for each.
f. Summary of trips taken, conferences attended, or other TO-related long-distance travel (attach Trip Reports (Section F, Deliverable 15) (Section J, Attachment G) as requested to the MSR for the reporting period). Trips shall be organized by PRD and supported mission partner.

g. Accumulated invoiced cost for each PRD by CLIN up to the previous month, including labor, materials and equipment, ODCs, and long-distance travel costs.
h. Projected cost of each PRD by CLIN for the current month, including labor, materials and equipment, ODCs, and long-distance travel costs.
i. Accumulated invoiced cost for each CLIN up to the previous month, including labor, materials and equipment, ODCs, and long-distance travel costs.
j. Projected cost of each CLIN for the current month, including labor, materials and equipment, ODCs, and long-distance travel costs.

C.5.1.4 SUBTASK 4 – CONVENE TECHNICAL STATUS MEETINGS

At the request of the Government, the contractor PM shall convene Technical Status Meetings (Section F, Deliverable 07) for the RSC-NCR and its mission partners. Attendees will be all contractor project-relevant Key and non-Key Personnel, the RSC-NCR TPOC, applicable RSC-NCR ATPOCs, and the FEDSIM COR. The purpose of the meetings is to review project status for the RSC-NCR and its mission partners' projects, as designated through the PRD, to review schedule, resource usage, performance metrics, technical issues, and potential risks. The contractor shall provide Technical Status Meeting Minutes (Section F, Deliverable 08), including attendance, issues discussed, decisions made, and action items assigned, to the RSC-NCR TPOC, RSC-NCR applicable ATPOCs, and the FEDSIM COR within five workdays following the meeting.

C.5.1.5 SUBTASK 5 – PREPARE A PROJECT MANAGEMENT PLAN (PMP)

The contractor shall document all support requirements in a PMP. The contractor shall provide the Government with a draft PMP (Section F, Deliverable 09) at the Kick-Off Meeting on which the Government will make comments. The final PMP (Section F, Deliverable 10) shall incorporate the Government's comments.

The PMP shall:

a. Describe the proposed management approach.
b. Contain detailed Standard Operating Procedures (SOPs) for all tasks.
c. Include milestones, tasks, and subtasks required in this TO.
d. Provide for an overall WBS with a minimum of three levels and associated responsibilities and partnerships between Government organizations.
e. Describe in detail the contractor's approach to risk management under this TO.
f. Describe in detail the contractor's approach to communications, including processes, procedures, communication approach, and other rules of engagement between the contractor and the Government.
g. Contain a decision log to provide a concise, centralized record of all decisions, approvals, or agreements affecting the scope, schedule, or internal and/or external deliverables for the TO identified by task and PRD and organized by PRD.
h. Contain a Communication Plan to identify and track all required communications as part of the PMP, which identifies all key stakeholders and appropriate communications format (e.g., meetings and briefings), content, and schedule for each stakeholder.

i. Include the contractor's QMP.

C.5.1.6 SUBTASK 6 – UPDATE THE PROJECT MANAGEMENT PLAN (PMP)

The PMP is an evolutionary document that shall be updated annually at a minimum (Section F, Deliverable 11). The contractor shall work from the latest Government-approved version of the PMP.

C.5.1.7 SUBTASK 7 – PROVIDE QUALITY MANAGEMENT

The contractor shall identify and implement its approach for providing and ensuring quality throughout its solution to meet the requirements of the TO. The contractor's QMP shall describe the application of the appropriate methodology (i.e., quality control and/or quality assurance) for accomplishing TO performance expectations and objectives. The QMP shall describe how the appropriate methodology integrates with the Government's requirements.

The contractor shall provide the Government with an updated draft QMP (Section F, Deliverable 12) at the Kick-Off Meeting on which the Government will make comments. The final QMP (Section F, Deliverable 13) shall incorporate the Government's comments.

The contractor shall periodically update the QMP, as required in Section F (Section F, Deliverable 14), as changes in program processes are identified.

The Government will monitor performance utilizing a Quality Assurance Surveillance Plan (QASP) (Section J, Attachment Y).

C.5.1.8 SUBTASK 8 – PREPARE TRIP REPORTS

The Government will identify the need for a Trip Report (Section F, Deliverable 15) when the when the request for travel is submitted. The contractor shall keep a summary of all long-distance travel including, but not limited to, the name of the employee, location of travel, duration of trip, and POC at the travel location. Trip Reports shall also contain Government approval authority, total cost of the trip, a detailed description of the purpose of the trip, and any knowledge gained. At a minimum, Trip Reports shall be prepared with the information provided in Section J, Attachment G.

C.5.1.9 SUBTASK 9 – TRANSITION-IN

The contractor shall update the draft Transition-In Plan (Section F, Deliverable 16) provided with its proposal and provide a final Transition-In Plan (Section F, Deliverable 17) as required in Section F. The SMARTECS TO is a new requirement, however, the contractor shall facilitate knowledge transfer of existing Government Furnished Information (GFI) during Transition-In. The contractor shall implement its Transition-In Plan No Later Than (NLT) ten calendar days after TOA, and all transition activities shall be completed 90 calendar days after approval of its final Transition-In Plan (Section F, Deliverable 17).

C.5.1.10 SUBTASK 10 – TRANSITION-OUT

The contractor shall provide transition-out services when required by the Government. The Transition-Out Plan shall facilitate the accomplishment of a seamless transition from the incumbent to an incoming contractor/Government personnel at the expiration of the TO. The

contractor shall provide a Draft Transition-Out Plan (Section F, Deliverable 18) within six months of Project Start (PS). The Government will work with the contractor to finalize the Transition-Out Plan (Section F, Deliverable 19) in accordance with Section E. At a minimum, this Final Transition-Out Plan shall be reviewed, updated, and provided to the Government on an annual basis. Additionally, the Final Transition-Out Plan shall be reviewed and updated quarterly during the final TO Option Period (Section F, Deliverable 20).

In the Transition-Out Plan, the contractor shall identify how it will coordinate with the incoming contractor and/or Government personnel to transfer knowledge regarding the following:

a. Program management processes.
b. Government and contractor POCs.
c. Location of technical and program management documentation.
d. Status of ongoing technical initiatives.
e. Appropriate contractor-to-contractor coordination to ensure a seamless transition.
f. Transition of Key Personnel.
g. Schedules and milestones.
h. Asset management.
i. Actions required of the Government.

The contractor shall also establish and maintain effective communication with the incoming contractor/Government personnel for the period of the transition via weekly Transition-Out Status Meetings (Section F, Deliverable 21) or as often as necessary to ensure a seamless transition-out.

The contractor shall implement its Transition-Out Plan NLT six months prior to expiration of the TO. All facilities, equipment, and material utilized by the contractor personnel during performance of the TO shall remain accessible to the contractor personnel during the transition-out period pursuant to the applicable security in-processing and out-processing guidelines.

C.5.2 TASK 2 – PROVIDE ENGINEERING AND TECHNICAL SERVICES

The contractor shall provide engineering and specialized technical services for the RSC-NCR and its mission partners to conduct fundamental research, scientific study, and experimentation to develop new or improve existing operational technical capabilities. The contractor shall prepare Trends and Capabilities Development Reports (Section F, Deliverables 23-26) in support of this task. The contractor shall also provide technical inputs, analysis, and other Engineering Reports (Section F, Deliverable 22) to the RSC-NCR TPOC and/or ATPOCs, as applicable per the PRD, as part of Government documents and briefings. These deliverables are content and project-specific and will be further detailed in the PRD, as required.

The contractor shall use its in-depth understanding of Government technology development processes, including capabilities and limitations of applicable technologies and domain expertise, to deliver engineering and technical solutions under the TO.

The contractor shall ensure that mission objectives and system criteria requirements are fulfilled. To the maximum extent possible, the contractor shall utilize open systems architecture and the demonstration of clear and definable improvements in the performance, logistics supportability,

reliability, and maintainability of the item. The contractor shall use the latest technology in consonance with economic considerations. If applicable, design concepts shall include provisions for continuous technological upgrade to maximize opportunities for product improvement available from emerging technological advances in the commercial marketplace. The contractor shall use Commercial-Off-the-Shelf (COTS) equipment and software whenever possible to meet SMARTECS requirements.

C.5.2.1 SUBTASK 1 – PROVIDE ISR EVALUATION AND ANALYSIS

The contractor shall provide expertise on ISR platforms, sensors, architectures, data analysis, and cyber protection and research to meet mission-specific SMARTECS requirements. The contractor shall promote research and evaluate opportunities for meeting existing mission needs and further expanding mission capabilities through the application of next-generation technology and processes to system components. The contractor shall coordinate and represent program interests with system developers, vendors, and other USG organizations. The contractor shall assist the Government with evaluation and analysis and prepare ISR Evaluation and Analysis Trends and Capabilities Development Reports (Section F, Deliverable 23) as they relate to mission needs.

C.5.2.2 SUBTASK 2 – PROVIDE SPECIAL OPERATIONS MISSION SUPPORT

The contractor shall provide expertise for SOF and other special mission-oriented systems, acquisition processes, and other related needs as required to support SMARTECS program needs. The contractor shall promote, research, and evaluate opportunities for meeting existing mission needs and further expanding mission capabilities through the application of next-generation technology and processes to system components. The contractor shall provide technical expertise and represent SMARTECS program interests and coordinate, as directed by the Government, with system developers, vendors, and other USG organizations. The contractor shall assist the Government with evaluation and analysis and prepare Special Mission Operations Trends and Capabilities Development Reports (Section F, Deliverable 24) as they relate to mission needs.

C.5.2.3 SUBTASK 3 – CONDUCT BOMBER OPERATIONS ANALYSIS AND PLANNING

The contractor shall conduct analysis and planning in support of AFGSC Special Access Programs (SAP) and other related programs. The contractor shall assist the Government with the definition, development, and mission utility assessment of advanced requirements to support AF conventional and nuclear bomber operations. The contractor shall provide technical and analytical support and expertise in the areas of bomber mission requirements, Concept of Operations (CONOPs), capabilities development, and logistics for both nuclear deterrence and global strike operations. The contractor shall assist the Government with evaluation and analysis and prepare Bomber Operations Trends and Capabilities Development Reports (Section F, Deliverable 25) as they relate to mission needs.

C.5.2.4 SUBTASK 4 – PROVIDE ADVANCED TECHNOLOGY RESEARCH

The contractor shall provide guidance in advanced and emerging technologies for SMARTECS (e.g., hypersonics, Light Detection and Ranging (LIDAR), hyperspectral, laser communications, Radio Frequency (RF), Signals Intelligence (SIGINT), and other areas critical to manned and unmanned aircraft mission operations and effectiveness). The contractor shall assist the Government with evaluation and analysis and prepare Advanced Technology Trends and Capabilities Development Reports (Section F, Deliverable 26) as they relate to mission needs.

The contractor shall provide software development and data analytics, leveraging leading edge technologies and high speed architectures/computing (to include quantum), to improve the warfighters' capability through the application of big data analysis on ISR data research in support of operational airborne and other mission requirements.

C.5.3 TASK 3 – PROVIDE INTEGRATION AND TESTING SERVICES

The contractor shall provide integration and testing services as described in the following subtasks to support the integration of airborne ISR sensor payloads within host aircraft platforms. The contractor shall provide integration support throughout the testing and system maturity lifecycle. This will include pre-test support to facilitate the installation of the ISR sensor payload into the system configuration of the aircraft platform. Successful integration of the ISR subsystem will enable field testing and continuing developmental efforts to initiate and continue throughout the project lifecycle, as detailed in the PRD. The contractor shall provide integration and testing services as described in the following subtasks to support the integration of airborne ISR sensor payloads within host aircraft platforms.

C.5.3.1 SUBTASK 1 – INTEGRATION SUPPORT

The contractor shall provide integration support to enable use of the sensor or other devices within the appropriate platform. These shall be documented, as required, in a System Integration Plan (Section F, Deliverable 27) and may include data such as site surveys, engineering and integration plans, compatibility considerations, planning of Operational Readiness Exercises, acceptance review criteria, and other potential documentation. Specific system integration support tasks may include, but are not limited to:

a. Providing site surveys, engineering planning, and design support for new installations.
b. Supporting installation and integration of payloads onto manned and unmanned aircraft.
c. Supporting installation and testing of data links and communication networks to provide connectivity between payloads, operators, and end users.
d. Performing integration testing to ensure compatibility with the host platform and to satisfy safety certification requirements of the platform operator.
e. Providing end-to-end T&E of payloads and systems in accordance with approved test plans and procedures.
f. Assisting the Government with the planning and conducting of Operational Readiness Exercises.
g. Supporting readiness and acceptance reviews.

h. Supporting maintenance and repair of contractor-furnished equipment and systems in accordance with TO and subsequent PRDs.

C.5.3.2 SUBTASK 2 –FIELD TESTING, EVALUATION, AND VERIFICATION

The contractor shall plan and execute a field test, evaluation, and verification process for capabilities and exercised options to show that the processes are fully compliant with the requirements. The process may include software, hardware, interfaces, Electromagnetic Interference/Electromagnetic Compatibility (EMI/EMC), structural coupon testing of composite material, structural testing of the assembly, and environmental testing such as thermal shock, humidity, temperature, and vibration in accordance with standards as dictated by the platform operator. The process shall involve Government-provided and contractor-acquired fixed-wing aircraft, lighter-than-air aircraft, and/or rotary-wing aircraft.

The contractor shall research and develop an optimal process for T&E of each system, subsystem, platform, or sensing system to be prototyped. This shall require evaluating the testing needs of prototypes and developing appropriate Field Test Plans (Section F, Deliverable 28), including plans for field demonstrations and for participating in field exercises. The field testing process specified in the plans shall employ realistic operational scenarios and shall meet all testing requirements specified by the Government. Each Field Test Plan shall include a discussion of how R&D, conducted to develop the Field Test Plan, led to the selection of the optimal test method. The field test planning process shall also include designing and developing automated test systems, such as hardware in the loop, and developing test data collection and evaluation methods, such as quantitative and qualitative methods.

C.5.3.3 SUBTASK 3 – DEVELOPMENTAL AND OPERATIONAL TESTING

The contractor shall assist the Government in conducting developmental testing, operational testing, demonstrations, and assessments and/or verifying and validating resolution of deficiencies. The contractor shall perform developmental testing on the selected military systems, subsystems, platforms, and sensing systems related to ISR, cyber, and special mission operations. The testing performed shall take place in realistic operational scenarios and shall meet all testing requirements, such as percent coverage, specified by the Government. The contractor shall use a Requirements Traceability Verification Matrix (RTVM) process to describe how the system(s) will be tested to demonstrate the desired functionality. The contractor shall prepare Developmental and Operational Test Plans (Section F, Deliverable 29) and any Test Reports (e.g., letter, interim, quick look, and final reports) to support the Government meeting its test objectives. The Final Test Report (Section F, Deliverable 30) shall be submitted, as required. The contractor may be required to provide inputs, as needed, to Government-owned Developmental and Operational Test Plans, based on its support role to the overall effort. The contractor shall provide testing support in the areas of test plan development, test execution, test observation, test assistance, and test assessment. The contractor shall also perform sensor integration and testing for manned and unmanned airborne systems as well as sensor integration studies and assessments for space-based systems. The contractor shall ensure that all hardware, software, test equipment, instrumentation, supplies, facilities, and personnel are available and in place to conduct or support each scheduled test and be capable of furnishing technical personnel at test sites to perform such testing. If a phased approach is used, the contractor may be required

to recommend corrective actions discovered in previous testing before retesting and update the Test Report.

C.5.4 TASK 4 – PERFORM MODELING AND SIMULATION

The contractor shall perform modeling and simulation and other technical support related to mission needs. Modeling and simulation services shall develop data as a basis for making managerial, technical, strategic, or tactical decisions. The contractor shall utilize operations research methodologies, statistical analysis, and simulation tools to analyze system alternatives and develop recommendations in terms of mission effectiveness, vulnerability, and cost and document the findings in Modeling and Simulation Reports (Section F, Deliverables 31-33).

C.5.4.1 SUBTASK 1 – GENERAL MODELING AND SIMULATION

The contractor shall apply a standardized, rigorous, structured methodology to create and validate a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. The contractor shall also involve the use of models, including emulators, prototypes, simulators, and stimulators, either statically or over time, to develop General Modeling and Simulation Reports (Section F, Deliverable 31) as a basis for making managerial, technical, strategic, or tactical decisions.

C.5.4.2 SUBTASK 2 – MODELING AND SIMULATION TOOLS AND ANALYSIS

The contractor shall provide modeling and simulation expertise for the purpose of identifying new engineering tools and simulation environments technology and provide Modeling and Simulation Tools and Analysis Reports (Section F, Deliverable 32), techniques, methodology, and software that will ultimately enhance systems supporting ISR, hypersonics, tactical and strategic aircraft operations, and cyber operations. The contractor shall conduct research and analysis to develop Tactical and Strategic Modeling and Simulation Reports (Section F, Deliverable 33) to enhance tactical and strategic survivability and lethality decisions via quantitative and qualitative techniques. The contractor shall utilize operations research methodologies, statistical analysis, and simulation tools to analyze system alternatives and develop recommendations in terms of mission effectiveness, vulnerability, and cost.

The contractor shall use the developed modeling and simulation to perform preliminary evaluations of engineered solutions to validate that objectives are being met, such as:

a. Prediction and analysis of prototype system performance.
b. Determination of capabilities and limitation of existing systems.
c. Prediction of performance of high speed hypersonic vehicle propulsion, designs, and materials.
d. Determination of geolocation accuracy.
e. Modeling and simulation of sensors.
f. Predication of overall communications coverage.

C.5.5 TASK 5 – CONDUCT TECHNOLOGY TRANSITION

The contractor shall conduct technology transition activities to efficiently and effectively migrate successful technologies to both follow-on acquisition programs and theater operations, where

applicable. The contractor shall prepare Technology Transition Plans and Reports (Section F, Deliverables 34-36) required to effectively plan and execute the transition of technologies from R&D to acquisition and operations. Technology Transition Plans and Reports shall include analysis and recommendations of aircraft sensor systems and data processing capabilities and overall platform and systems acquisition planning. The contractor shall also provide inputs to Government-authored Technology Transition Plans.

C.5.5.1 SUBTASK 1 – TECHNOLOGY TRANSITION ANALYSIS AND RECOMMENDATIONS

The contractor shall provide New Technology Transition Analysis Reports (Section F, Deliverable 34) detailing research and analysis of new technologies for warfighter applications that will enhance transition of technologies and focus on the mission needs and requirements. A principal component of these analyses will be in the processes that enhance efficient transition of the R&D products to operational status. The contractor shall provide system certification and accreditation analysis, functional testing, user engagement, knowledge continuity, and documentation under this subtask.

C.5.5.2 SUBTASK 2 – R&D TRANSITION

The contractor shall identify new R&D opportunities for transition into operational environments and, based on these analyses, make recommendations for alternate stakeholders to leverage this technology transition. These shall be addressed in the Operational Environments Technology Transition Plan (Section F, Deliverable 35) and Operational Environments New Technology Report (Section F, Deliverable 36), as required and detailed in the PRDs.

C.5.5.3 SUBTASK 3 – PLATFORM AND SYSTEMS PLANNING

The contractor shall provide platform and systems planning in support of baseline acquisition, research, and SOF-unique platforms (e.g., MC-130, AC-130, MH-60, HH-60, MC-12, MQ-1, RQ-11) and systems. The contractor shall recommend approaches for technology transition and technology insertion to include in Operational T&E Plans (Section F, Deliverable 37). The contractor shall also provide inputs to overall Government Platform and Systems Life-Cycle Cost Estimates (Section F, Deliverable 38), and low-rate initial production planning, monitoring, and improvement.

C.5.6 TASK 6 – PROVIDE EDUCATION, TRAINING, AND TTP DEVELOPMENT SERVICES

The contractor shall provide education, training, and TTP development services to support SMARTECS objectives. This includes dedicated support for the training platform(s) with specific integrated technology support and TTP development support services to air warfare demonstration activities.

C.5.6.1 SUBTASK 1 - PROVIDE EDUCATION, TRAINING, AND PLATFORM SUPPORT

The contractor shall provide dedicated education materials and hands-on demonstration support for the training platform(s) with specific integrated technology support as outlined in the PRD.

The contractor shall support and track reconfiguration of training platforms. These shall be documented, as required, in Operation and Training Plans (Section F, Deliverable 39). The contractor shall also be required to provide inputs to Government Training and Operations Manual updates, as needed. Platforms may include, but not be limited to, the AC-130/MC-130, Cessna Caravan, and MQ-9. Training may also include web-based training platforms supporting the Battlefield Airman and Joint Terminal Attack Controller (JTAC) mission needs.

C.5.6.2 SUBTASK 2 – TTP DEVELOPMENT SUPPORT

The contractor shall provide TTP development support services to air warfare demonstration activities, such as the Neptune Series Exercises and other joint exercises. The contractor shall develop draft inputs to Exercise and Utility Assessment Plans for use during the exercises. The contractor shall leverage subject matter experts in areas including, but not limited to, fighter aircraft (e.g., F-15E, F-16, F-22, and F-35), bomber aircraft (e.g., B-52, B-1, and B-2), and Special Operations aircraft (e.g., MC-130 and AC-130) to address the performance of these systems against established TTPs. The contractor shall identify capability shortfalls, gaps, improvements, and recommendations for further research and testing. The contractor shall also conduct CONOPs, updates, and evaluations to address overall TTPs and document results and recommendations in a TTP Analysis and Recommendations Report (Section F, Deliverable 40). Additionally, the contractor shall propose updates to TTPs based on subject matter expertise and develop scenarios for further testing of capabilities and methods in an operational context.